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INVENTORY ACCURACY IN NISTARS CONTROLLED NON-MECHANIZED WAREHOUSES

by

Stephen Douglas Westhoven

December 1990

Thesis Advisor: Keebom Kang

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The study indicates that there is a significant difference (13% less) in the inventory accuracy in non-mechanized warehouses under NISTARS

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Inventory Accuracy in NISTARS Controlled
Non-mechanized Warehouses

by

Stephen Douglas Westhoven
Lieutenant, United States Navy
B.B.A., University of Toledo, 1972

Submitted in partial fulfillment of the
requirements for the degree of

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December 1990

Author: [redacted]
Stephen D. Westhoven

Approved by: [redacted]
Keebom Kang, Thesis Advisor

[redacted]
Donald Barr, Second Reader

[redacted]
David R. Whipple, Chairman,
Department of Administrative Sciences

ABSTRACT

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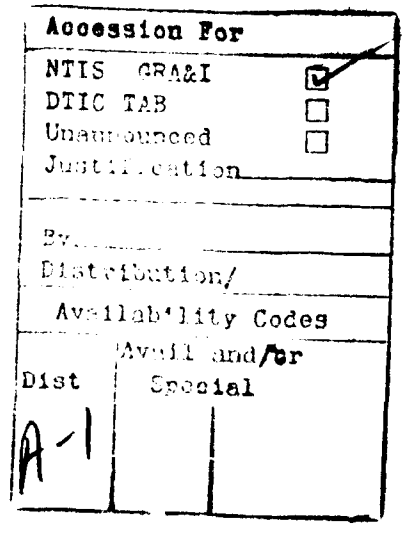
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I. INTRODUCTION

One of the major responsibilities of the Naval Supply System is the effective and efficient utilization of public resources to support Navy fleet and shore establishments. One portion of this responsibility is inventory management. This includes procurement, transportation, receipt, storage, issue and accountability of material necessary to carry out the mission of the Navy. This can range from managing material worth millions of dollars to just pennies.

A part of the inventory management program is inventory accuracy. This is a measure of the degree to which the quantity on the book records reflects the actual quantity on the shelf. The accuracy of these records is essential for Navy fleet and shore operations support. The impact of inventory inaccuracies can be serious and far-reaching. Some examples are:

* Readiness and support for the fleet are affected. When material cannot be found in its designated storage location the unit will experience a delay in receiving the material that might range from a couple of days (if it is available at another stock point) to several months or longer (if the item must be procured). If the material in the location is overstated on the records, eventually it will lead to a stockout situation and delays.

* Utilization of limited Navy resources occurs unnecessarily. When material is lost, stock fund money may be spent to procure the item. If the material is located after the procurement has happened, you have additional material on hand. While this material will probably be

used, it could possibly have delayed the procurement of other needed material unnecessarily.

* The impact on the creditability of the Navy to manage the public resources can be serious. Annually the Navy must submit a budget request to the Administration for funds to operate. If the perception is that the Navy cannot effectively and efficiently manage the public funds, budget submissions are critically reviewed especially in times of national economic difficulties.

To understand the magnitude of the problem, if a stock point had an inventory valued at $4.7 billion and the inventory accuracy rate was 99.9%, the impression would be that the stewardship of the public trust was in good hands. But, with an annual inventory adjustment rate of one-tenth of one percent (.001), the dollar value of the adjustment would be $4.7 million. Stated in this fashion it would appear that the stewardship was lacking. This perception problem is another reason inventory accuracy is so important.

This perception problem is particularly important for the Navy because of well-publicized inventory problems that surfaced in the late 1970's and early 1980's. The conclusions drawn from the Naval Supply Systems Command's (NAVSUP) 1982 study of the problem were directly tied to human errors as the main cause of inventory adjustments. To correct that situation the Navy undertook several initiatives to reduce the human error factors and to improve inventory accuracy. Some of these included increasing personnel, increasing training, updating the computer system and increasing automation. This

increased automation is called Naval Integrated Storage Tracking And Retrieval System (NISTARS).

NISTARS is a computer-controlled mechanized warehouse system. It is designed to have complete control of the material from the time it is processed through the receipt section until it leaves the shipping dock. This is accomplished by the computer directing every action that is to take place. It controls not only the actions of the machines but also the humans that interact with it. This control was essential to improve the inventory accuracy of the system.

Even with this control there are still problems. The two major ones are the interface with the Uniform Automated Data Processing System--Stock Point (UADPS-SP) and the extension of NISTARS to control non-mechanized warehouses. The difficulties in operating in these two areas has created additional inventory inaccuracies. Because of the complexities involved, the solutions are not clear. Much work has gone into these problems but more research is still required to find solutions.

The focus of this study is to investigate the effects of NISTARS on the inventory accuracy of non-mechanized warehouses. The current objective of the Navy is to place all non-mechanized warehouses under NISTARS control in the near future. This study is to attempt to determine the effect on inventory accuracy of non-mechanized warehouses when placed

under NISTARS control and identify the reasons for the difference if any.

The approach is to look at the information generated in the Statistical Accuracy Techniques and Measuring Analysis (STATMAN) random sample inventories including the computer-generated reports. The STATMAN inventories are being used because they are taken across the entire inventory. The results of these inventories then can be considered as representative of the whole inventory. This information is contained in printed material and has been manually input to a personal computer. It has been sorted first by location and then by research code. The research code is assigned to show the status of the inventory (if an adjustment was made or not and the reasons). These data will be analyzed to determine if there is a difference in accuracy rates between the areas and if any reasons for the difference are evident.

The structure of this thesis is as follows. The first chapter is an introduction. The second is a discussion of the UADPS-SP and NISTARS systems and the interface between them. The third chapter is a discussion of the inventory policies and procedures utilized in NAVSUP. Chapter IV is a presentation of the methodology used in the study, the data collected, and the results of the analysis. Chapter V gives the conclusions and recommendations.

II. BACKGROUND

In researching the background material for this subject, we found that the information available through the library on the subject of inventory accuracy was extremely limited. The vast majority of available literature is on inventory control and inventory models in particular. Therefore the bulk of the information used in this report was obtained from government publications and instructions.

UADPS-SP is the standard Department of the Navy (DON) computerized system for supply and financial management at Stock Points. In 1961 a committee was formed by NAVSUP to standardize the mechanized procedures and equipment at Stock Points. The actual development of the applications to be implemented in the UADPS-SP program was assigned to various Stock Points. By 1963, the first segment of UADPS-SP had been installed on the IBM 1410 computer system.

As development of UADPS-SP progressed, the control and coordination between the various applications became more difficult. It was decided that it would be more advantageous for the development of the application programs if the design and maintenance of the UADPS-SP programs was placed under one central organization. By the middle of 1964, the Data Systems Support Office (DASSO) was established. This office has now become the Fleet Material Support Office (FMSO) and is now the

major design facility for automated programs for the Navy. It is located in Mechanicsburg, PA.

From the very inception of the program, a climate of continual change was established. In 1965, most of the remaining Stock Points were converted to the new system. In addition to these changes there was also a major hardware change being implemented at the same time. This hardware upgrade required that the operating system for UADPS-SP be revised which created a requirement for the complete reassembly of all UADPS-SP programs. This meant that it was necessary to rewrite or originate 125 major UADPS-SP programs. Included in this process was the requirement to implement the new Military Standard Transaction and Reporting Procedures (MILSTRAP), along with certain major financial changes. Due to the size of this undertaking, dual systems were required to be maintained for the five-month period that this took place.

The next major innovation to the UADPS-SP system came in 1970 with the development of the Multiple File Concept (MFC). Under this system the files of the different independent supported activities (satellites) were on removable disks that would be switched at predetermined times to run a satellite's program cycle and then switched back to the host system. "Essentially, then, all of the UADPS-SP programs become accessible for supporting the UADPS-SP (MFC) system user as an independent supply and accounting activity in a real-time/batch processing mode." [Ref. 1:p. 2-5] This made the

satellite like all other users except that it must rely on the host for computer time and either pass the batch data over communication lines or physically transport it to the host.

This system proved not to be ideal for several reasons and another new system was developed and implemented in 1971 called Multiple Activity Processing System (MAPS). This coincided with the selection of the Burroughs 3500 computer system. This system is a COBOL-based system and the UADPS system needed to be converted to operate in it. This new framework for the third generation computer system was called MARK-II.

> MARK-II provided the opportunity to change the environment under which a program is processed. File-level controls of user data are enforced through file naming standards. Record-level user identification is provided for most transactions and all transaction/reconstruct data. User parameters are no longer patched into programs but are obtained from a System Constant Area (SCA). True multiprogramming is under the guidance of the Master Control Program (MCP), the operating system provided by Burroughs. [Ref. 1:p. 2-6]

The major goal of this new system was to provide much improved support to the satellite users. It eliminated the need for transporting batch input/output. Data are transmitted to the host from a minicomputer at the satellite. The output is then transmitted back to the satellite utilizing the new Data Communications Handler (DCH) System. This eliminates expensive overhead while providing a responsive system for control of job stream data and recovery.

Another major change during this period was the conversion from Federal Stock Number (FSN) to National Stock Number (NSN). This change was made to add a two digit code to indicate the country of origin of the stock number. This then required a modification of virtually the entire UADPS-SP master program library.

Other changes to UADPS-SP in the late 1970's were the introduction of Integrated Disbursing and Accounting (IDA) for the financial management systems area. Uniform Management Reports (UMRs) were implemented for the financial resources management system. The Financial Improvement Project (FIP) refined the Financial Inventory Control and Stores Accounting systems processing. System Information Retrieval (SINR) and System Information Maintenance (SINM) were introduced to optimize response time frames for all basic data retrieval functions. These were some of the major enhancements to the main-line UADPS-SP supply processing modules that occurred during this time frame.

During the 1980's many other significant changes have occurred that affects UADPS-SP. Early in the 1980's the system was switched to the Burroughs 4800 computer system. In the mid-1980's the SPLICE program was implemented. This provided a second computer, TANDEM, that mirrored the Burroughs and basically acted as a front end processor in that all transactions were processed on the TANDEM and it updated the masterfiles which were maintained in the Burroughs. This

system was to improve the processing and response time of the whole system. Another project, SPAR, was to replace UADPS-SP but before implementation it was stopped to develop a DOD-wide computer system.

As the history of UADPS-SP reveals, it is a system that has been under some major revision since its inception. It is also a system that is obsolete and scheduled for replacement. Yet this system maintains the current official records for the Navy. New systems must be able to interface with UADPS-SP to update the official records and UADPS-SP must be able to interface with all these new systems to keep them updated.

NISTARS is the newest system developed for the Navy to improve material handling and inventory accuracy. It is an automated warehouse system that is designed to have complete cognizance of the material under its control. This is accomplished by providing,

> ...constant tracking and process control of virtually all aspects of physical distribution functions from material receipt, location assignment, storage, retrieval, shipment consolidation and preparation of delivery documentation. NISTARS also performs other important tasks such as physical inventory management, shelf-life control of perishable stock, self-directed audits and database reconciliation, customer service inquiries, and management reports. [Ref. 2:p. 2]

This system was designed to modernize supply operations, increase productivity, increase the accuracy of inventory management and improve responsiveness to customer requirements.

NISTARS is a complete computer-controlled distribution processing facility. Material is located in high-rise storage complexes and is stored in bins, racks, or pallets depending on the size or weight of the material. The ministacker complex is used to store small fast moving bin items by using a robotic mini-load system. The slower-moving bin items, rackable items, and palletized items are stored and retrieved by people who ride specially designed manned storage and retrieval machines (MS/RM). Conveyors or Automated Guided Vehicles (AGV's) are utilized to move material throughout the mechanized warehouse. The conveyor system utilizes bar-coded labels affixed to the bottom of "slave pallets" or "tote pans" or even conveyable cartons to direct material to the correct destination.

The central computer directs all activity in the automated warehouse and is known as NISTARS Central Control System (NCC). It is a TANDEM TPX multiprocessor computer system designed for an on-line transaction processing environment. NISTARS workstations interface with this computer. These are equipped with an Intelligent Remote Terminal (IRT). This terminal itself is a computer and can have several peripheral devices attached to it. These may include, in addition to the standard devices of a Central Processing Unit (CPU), Cathode Ray Tube (CRT) display, keyboard, and badge reader, printers or cube/weight scales or barcode wands. For security reasons, access is granted only to those that have the proper badge

that the computer recognizes and the correct password. If an attempt to gain access is tried without these, a supervisor's terminal is notified by the computer. Each individual IRT can be programmed to perform a specific function. This is accomplished by a download from the NCC. Not all functions can be performed at all stations.

Besides having control of the automated warehouse, in 1988 NISTARS was given control of several non-mechanized storage areas. In these areas all work is accomplished by manual labor or the use of MHE (Material Handling Equipment) such as pallet jacks or forklifts. They also contain both the IRT from NISTARS and the Burroughs terminal from UADPS-SP. The Navy plans to bring all the non-mechanized warehouses eventually under NISTARS control to eliminate confusion in the warehouses.

The interface between NISTARS and UADPS-SP is an on-line interactive system. The exception to this is the physical inventory program which operates in a batch posting mode. This is designed to capture all the infloat activity to enhance the reconciliation process with the UADPS-SP database.

> Due to the different processing methodologies employed by UADPS-SP and NISTARS (pre-post and post-post respectively) in maintaining asset balances, the quantity of material that they reflect as on-hand and available for issue will not necessarily be identical at any specific point in time. [Ref. 3: p. 6-5]

Both systems must exercise positive control over all infloat transactions to insure that the inventory process functions

smoothly. To assist in this, NISTARS is required to adjust its count by the cumulative value of all its infloat transactions prior to reporting to UADPS-SP.

The development of a computer system to control the Navy's inventory has been a dynamic process. From the very beginning the physical size and data requirements have grown steadily. The effort to continually improve has dictated many advances, including the latest, NISTARS. Along with all the benefits the new systems have brought with them, they also have brought many problems. This chapter has discussed the development of the current Navy system for control of its inventory. The next chapter will discuss the procedures for monitoring that control.

III. PHYSICAL INVENTORY PROCEDURES

The Physical Inventory Program as designated by the Department of Defense is comprised of four distinct functions. They consist of location survey, location reconciliation, physical inventory, and quality control checks. In this study we concentrate on the physical inventory aspect only.

Physical Inventory, according to NAVSUPINST 4440.115G, is a procedure,

> ...which determines if the stock point record balance is or is not in agreement with the assets on-hand at the storage site. Physical inventory consists of physical counts of the material in the warehouse and comparison of those counts with the stock point record balance after consideration of recent in-process transactions (e.g., receipts, issues, etc.). [Ref. 4:p. 13]

The stock points are responsible to place emphasis on the Inventory Program, allocate the resources to it, establish it as an organizational component separate from stock control and warehouse components, conduct random sample inventories on a quarterly basis, prepare annual schedules, conduct the inventories, reconcile inventories, prepare reports, and review and evaluate performance. This is required to meet the goal of the Navy Physical Inventory Program to establish and improve the inventory accuracy and accountability of material in stock point custody.

Under NAVSUP guidelines there are two basic types of inventories: scheduled and unscheduled. There are some basic

similarities between the two types and the general methodology of conducting inventories. Under the NAVSUP Inventory Program, to conduct an inventory the first thing that occurs is the request for the inventory. This can come from a number of different sources depending on the type of inventory. Next is the physical count of the material in the location (for NISTARS locations the book balance in NISTARS is used for the first count). Post-count validation and preadjustment research are the next two steps. The last step to "complete" the inventory is the recording of the adjustment if necessary. The reason for the quotes around the "complete" is that there is another step in the inventory process: causative research, that is started after the inventory adjustments are posted to the recorded that can change the adjustment due to more in-depth research.

To understand the process better, we discuss the scheduled and unscheduled inventories in more detail. The unscheduled inventory arises as the need occurs and can be initiated from several sources:

* warehouse refusals.
* in-house receipt losses.
* location survey variances.
* local requests for known or suspected imbalances.
* ICP (Inventory Control Point)/DSC (Defense Supply Center) requests.

These inventories must be completed within 15 days except for warehouse refusals which must be done in seven days. Automatic controls at ICP's and DSC's will cancel an inventory if the adjustment is not received within that time. In such cases, the resources utilized by the stock point will have been wasted. If an inventory is canceled it must be started again from the beginning.

The scheduled inventory, as the name implies, is a planned evolution and is scheduled for completion during the fiscal year. There are several types of inventories that must be completed on an annual, semi-annual, quarterly or monthly basis and come from several sources. Some of these are:

* random statistical sample inventory.
* nuclear water chemicals.
* level I/SUBSAFE (submarine material).
* subsistence (food).
* repairable support inventory assets.
* bulk petroleum products.
* hazardous material.
* ICP active item inventories.
* arms and ammunition.
* narcotics.
* classified material.
* pilferable items.
* radioactive items.
* inert nuclear ordnance material.

* SERVMARTS.
* shop stores and ready supply stores.
* W purpose (nonconsumable fixed allowance) assets.

Not all of this material is carried at all stock points, but as the list indicates, the inventory workload can be substantial. These inventories must be completed within 30 days. The longer time is allowed because this type of inventory is usually larger than an unscheduled inventory. Coordination with requesting activities is important so that the two inventories conducted at both activities coincide in order to preclude cancellation problems.

The following is the general procedure to conduct a scheduled inventory. Seven to 15 days prior to the actual cutoff date (the day the inventory is to begin) the request is submitted to the computer. This is done to capture any infloat transactions. These are transactions that occur after the inventory begins that could affect the record balances of the items to be inventoried. This is necessary because physical inventories in NAVSUP activities are conducted on an "open for business as usual" [Ref. 4:p. 18] basis. That means that the inventory is not frozen and the normal supply activity continues as usual.

On the actual cutoff date, the count cards are produced and the first count of the material begins. There are two exceptions to the first count being an actual count of material in the designated location. The first is material in

"M" condition (material in repair, renovation, rework, or assembly) and the second is material under NISTARS control (except for STATMAN inventories where an actual physical count is used for the first count). For these two cases instead of an actual count the book count is used for the first count. When the first counts are complete, they are input into the Automatic Inventory Reconciliation (AIR) program.

The AIR program will compare the first count against the record balance. If the first count matches the record balance, a zero adjustment is input and the inventory of that item is considered complete. If there is a discrepancy between the first count and the record balance, the AIR program will calculate the effect of the infloat transactions on the record balance and, if this calculation results in a match, a zero adjustment is input and the inventory on that item is complete. If the balances and the counts still do not match and the extended dollar value of the difference is less than $800 (and the item is not controlled), then the adjusted count is entered in the records and the inventory of the item is considered complete. But, if the extended dollar value is greater than $800, then the program will generate a second count card and a 60-day printout of the transaction ledger to be used by the preadjustment clerks to reconcile the second counts with the record balances. An exception to this is a controlled item (e.g., classified material, narcotics, etc.)

which is treated the same as any item whose extended dollar value is over the activity's causative research threshold.

If the adjusted second count matches the record balance at cutoff, a zero adjustment is input and the item is considered complete. If the first and second count do not match and the extended dollar value is below the activity's causative research level, the second count is used to adjust the record balance and the inventory is considered complete for that item. A third count will only be taken if the extended dollar value is above the activity's causative research threshold (or the item is controlled). If the adjusted third count matches the record balance at cutoff, a zero adjustment is input and the inventory is considered complete. If the third count matches the first or second count, the adjusted third count will be used. If the adjusted third count does not match the first or second, use the count that is the closest to the record balance.

The preadjustment clerks will review no more than 60 days of the transaction ledger to determine the possible cause for the discrepancy. Based on their research, some of the adjustments will not be made. When all research has been completed, all adjustments will be input and the inventory will be complete. This is, of course, if all research is accomplished within the required 30 day time frame. Not all items will be completed during the time required and those

items will show as canceled on the inventory report and have to be reinventoried from the beginning.

The final phase of the inventory process is the causative research phase. This begins when the inventory adjustments have been input to the records and the inventory is "completed." "The purpose of causative research is to identify, analyze, and evaluate the causes of inventory adjustments with the goal of eliminating the contributing errors" [Ref. 4:p. 1] This research is to be completed within 45 days after the completion of the inventory. This research is to go back as far as two years from the date of the inventory or to last inventory on that item, whichever is shorter. Based on the conclusions discovered in this process, inventory adjustments can be made to the records.

Scheduled inventories were an important part of the inventory accuracy program. They were conducted as wall-to-wall inventories. In terms of costs, this type of inventory is the least expensive to conduct. As the range of line items grew, the cost to complete wall-to-wall inventories grew also. Ways to be more cost effective and achieve the desired results had to be developed. This led to the development of the STATMAN random sample inventory. Normally a random inventory is more expensive to use. But the number of line items required to be inventoried under STATMAN, to provide the required information, is significantly less. This reduces the

total cost of the inventory program while providing the required amount of information.

The type of inventory we will be looking at is the STATMAN scheduled inventory which is required to be completed quarterly at the stock points. The fourth quarter STATMAN is the basis for the inventory schedule for the next fiscal year. It can also be the basis to change the inventory schedule based on the results of the quarterly STATMAN inventories.

STATMAN is a tool developed to assist the inventory managers. "STATMAN provides the inventory manager with the unique capability to stratify inventories, randomly determine samples, and receive statistically valid item and financial accuracy statistics on many facets of the stock point's inventory." [Ref. 5:p. ii] This type of inventory can provide important information from even small samples. It also provides reliable measures of inventory accuracy for small investments of resources.

The inventory manager can select from among 17 attributes to tailor an inventory to areas that the manager may want to look at specifically. These are:

* cog (cognizance symbol).
* location.
* unit price.
* condition code.
* purpose code.
* SMIC (Special Material Identification Code).

* MCC (Material Control Code).
* storage code.
* security code.
* unit of issue.
* FSC (Federal Supply Class).
* shelf life code.
* reservation quantity.
* on-hand quantity.
* date of last inventory.
* VAD (Value of Annual Demand).
* average quarterly demand.

The inventory can be divided into as many as 99 segments with each segment further defined by up to eight of these attributes. With these defined for the inventory, the inventory manager selects the confidence level he desires and the STATMAN program calculates the required statistical sample size. From this data STATMAN will estimate the accuracy of the entire population. Since STATMAN is a random sample inventory taken across the stock point's entire inventory, the results generated from these inventories can be used to compare the inventory accuracy between the three distinct inventory control areas: NISTARS mechanized, NISTARS non-mechanized, and UADPS-SP non-mechanized. The STATMAN program generates several reports in a variety of formats that can be used for various types of analysis. The UJ95 report used for this study gives a line item break down of the results of the

inventory. The information produced in this report includes the following (to mention a few): stock number, cog, research code, adjusted quantity, unit price, adjustment value, and location. From this information we can sort by location to determine which of the three areas the line items belong to. Next, the data are sorted by research code to determine if the item has been adjusted or not. Then the inventory accuracy percentages in each of the areas can be calculated.

This chapter laid out the basic ground rules for conducting a physical inventory in the Navy Supply System. The rules and procedures can be complex and difficult to follow because of the vast amount of information that is required for an inventory. In the next chapter we describe how we used some of these data to analyze the current inventory accuracy position of the three different areas at the Naval Supply Center (NSC), San Diego.

IV. METHODOLOGY AND DATA ANALYSIS

The three primary sources of data utilized in this study were official publications, official inventory records, and personal interviews. The official publications at NSC, San Diego provided the background information on the systems and procedures used for inventory control studied in this report.

Data were taken from UADPS-SP computer reports on inventory status titled UJ-95, a sample of which is in Appendix A. Appendix B contains a detailed list of the Error Classi-fication Codes and their definitions. The research codes in the UJ-95 used to designate the outcome of the inventory on a particular line item are identical to the Error Classification Codes in Appendix B.

Another source of information was personal interviews with several key personnel at the Naval Supply Center, San Diego. They were:

* Carol Mott, NISTARS Project Officer.
* Janet Nesseth, Director of Physical Inventory.
* Sarah Aguirre, Deputy Director of Physical Inventory.
* Deena Lee, NISTARS System Analyst.
* Phoebe Garcia, NISTARS System Analyst.
* Julie McCullough, UADPS-SP System Analyst.
* LCDR Bill Schworer, Director, Code 600.
* John Doyle, Inventory Accuracy Officer.

Approximately 106,000 line items are inventoried annually (both scheduled and unscheduled) at NSC, San Diego. Many of these inventories are directed at specific areas (such as clothing, jet engines, subsistence, etc) and not representative of the total inventory picture at the supply center. However, all supply centers are required to conduct a STATMAN inventory quarterly over the entire range of material under the supply center's control. These inventories are used in this study to determine the inventory accuracy rates and the reasons for the adjustments. The UJ-95 report from UADPS-SP contains both the location information and the research codes assigned which allows us to sort and segregate them into the three different areas under consideration. This information is used to answer the two research questions we are concerned with: the inventory accuracy comparison between areas and the reasons for the errors based on the research codes.

During FY90 three of these STATMAN inventories were conducted at NSC, San Diego. They were completed during the second, third, and fourth quarters. They were composed of 1471, 2022, and 1596 line items, respectively. These data were manually sorted and categorized from the STATMAN printouts. The result of this is presented in Table 1.

There are approximately 470,000 line items at NSC, San Diego. Of the three areas under consideration, UADPS-SP is in control of the largest number of line items. NISTARS is the second and NISTARS non-mechanized is the third (about 2% of

TABLE 1

LINE ITEM BREAKDOWN BY AREA AND QUARTER

	NISTARS	NISTARS NON-MECH	UADPS-SP NON-MECH	CUMULATIVE
2ND QTR	594 (40.4%)	21 (1.4%)	856 (58.2%)	1471 (100%)
3RD QTR	748 (37.0%)	28 (1.4%)	1246 (61.6%)	2022 (100%)
4TH QTR	570 (35.7%)	30 (1.9%)	996 (62.4%)	1596 (100%)
TOTAL	1912 (37.6%)	79 (1.6%)	3098 (60.8%)	5089 (100%)

the total line items) since it is basically one warehouse, building 322. That relationship is evident in Table 1 by the number of line items inventoried in each area by quarter. The percentages are roughly the same in each quarter. This table then gives us the total number of line items inventoried in each of the different areas in each quarter and the cumulative results as well.

The line items in Table 1 for each area and each quarter were further sorted by research code to determine if an adjustment was made or not. The results are contained in Table 2. A visual inspection of Table 2 shows that the percentage of adjustments in each area is approximately the same for each quarter. The NISTARS area ranges from 21% to 23%, the UADPS-SP area from 24% to 27%, and the NISTARS non-mechanized area ranges from 36% to 43%.

TABLE 2

SUMMARY OF UJ-95 RESULTS

	2ND QTR	3RD QTR	4TH QTR	CUMULATIVE
NISTARS				
no adjustment	471 (79.3%)	579 (77.4%)	440 (77.2%)	1490 (77.9%)
adjustment	123 (20.7%)	169 (22.6%)	130 (22.8%)	422 (22.1%)
NISTARS NON-MECH				
no adjustment	12 (57.1%)	18 (64.3%)	18 (60.0%)	48 (60.8%)
adjustment	9 (42.9%)	10 (35.7%)	12 (40.0%)	31 (39.2%)
UADPS-SP NON-MECH				
no adjustment	644 (75.2%)	907 (72.8%)	757 (76.0%)	2308 (74.5%)
adjustment	212 (24.8%)	339 (27.2%)	239 (24.0%)	790 (25.5%)
TOTAL ITEMS INVENTORIED NISTARS	594	748	570	1912 (37.6%)
NISTARS NON-MECH	21	28	30	79 (1.6%)
UADPS-SP NON-MECH	856	1256	996	3098 (60.8%)

Figure 1 shows the relationship between the three areas based on the percentage of adjustments from Table 2. Figure 1 clearly shows the NISTARS non-mechanized area has the highest adjustment rate of the three for each quarter. Figure 2 is the pictorial display of the cumulative data from Table 2. As in Figure 1, it clearly shows that the NISTARS

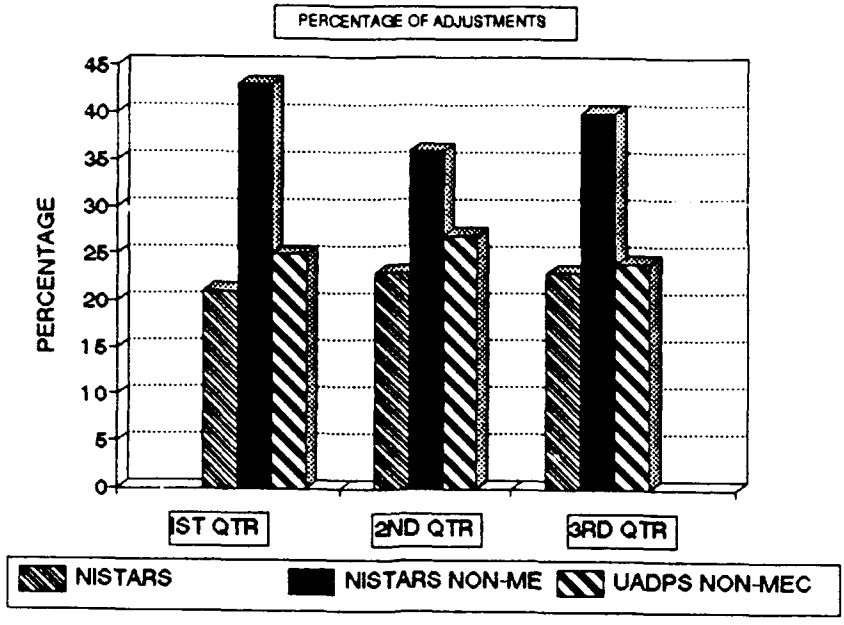


Figure 1. Percentage of Adjustments

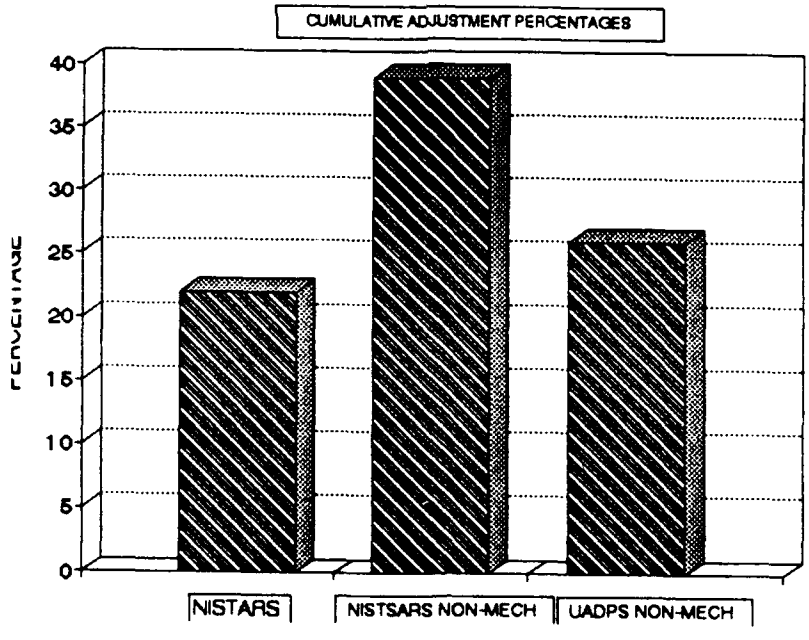


Figure 2. Cumulative Adjustment Percentages

non-mechanized area has the highest percent of cumulative adjustments of the three areas.

To determine if this information is significant we conducted a chi-square test using the MINITAB statistical computer program. This is a test to determine whether the percentage of adjustments were the same between the three areas. We test the null hypothesis that whether the percentage of adjustments in all three areas were equal. Table 3 is the output from the MINITAB program. The K1 value in Table 3 is the probability of being incorrect by rejecting the null hypothesis and concluding that the percentage of adjustments for each of the three areas is not the same. Since this probability is very small (0.00019), we are willing to reject the null hypothesis, and conclude that we are reasonably certain that these areas are not the same in terms of the percentage of adjustments. With the visual inspection of Figures 1 and 2, we can reasonably state that the NISTARS non-mechanized area has a significantly higher adjustment rate.

An additional chi-square test was conducted to determine if there was a difference between the NISTARS mechanized and UADPS-SP non-mechanized areas. The null hypothesis was tested to determine whether the percentage of adjustments in these two areas were equal. The K1 value again was very small (0.0059) and we conclude that these areas are not the same in percentage of adjustments. Based on this, we conclude that

TABLE 3

MINITAB OUTPUT

```
MTB> CHISQUARE of the table stored in C1-C3

Expected counts are printed below observed counts

          NISTARS     NISTARS     UADPS-SP      TOTAL
                      NON-MECH    NON-MECH

NO ADJ       1490          48        2308       3846
          1444.99       59.70     2341.31

ADJ           422          31         790       1243
           467.01       19.30      756.69

TOTAL        1912          79        3098       5089

CHISQ = 1.402 + 2.294 + 0.474 + 4.338 + 7.099 + 1.466
      = 17.074

df = 2

MTB> cdf 17.074 store in K1;
SUBC> CHISQUARE with 2 df.
MTB> Let K1=1-K1
MTB> PRINT K1
K1 = 0.000196099
```

NISTARS mechanized system did improve the inventory accuracy over the UADPS-SP non-mechanized system. This is again clear by looking at Figures 1 and 2.

Comparision of the two chi-square tests indicates an opposite result from what might be expected. We concluded after the second test that placing material under the NISTARS mechanized system improved the inventory accuracy over the UADPS-SP system. We would also expect that if non-mechanized warehouses were placed under NISTARS control they would

improve also. The first test contradicts this assumption. It indicated that the non-mechanized warehouses under NISTARS control had a significantly higher adjustment rate than the other two areas.

Having established that there is a difference between the areas we need to determine if the assigned research codes can determine the reasons. Table 4 gives a breakdown of the research codes that were assigned during the inventories. In the case of these three STATMAN inventories a total of only six different research codes (A, B, C, G, H, J) were assigned to the 5098 line items inventoried. Codes A and B both mean that there were no adjustment made. Research code A is assigned by the computer when the count, infloat, and record balance all agree. Code B is assigned by the pre-adjustment clerk after a review of the same documentation when the computer could not reconcile the item. These two codes accounted for 74.4% of the total inventory reviewed.

Code C only appeared once in all the inventories and is therefore not significant to this study. Codes G, H, and J all indicate that adjustments were made to the records for a specific reason. Code G is assigned by the computer to all adjustments for which the extended dollar value of the adjustment is less than $800. Code H is assigned by the pre-adjustment clerk upon acceptance of the adjustment to the records and the value is below the causative research threshold ($2500 at NSC, San Diego). Code J is assigned by

TABLE 4

RESEARCH CODES FROM UJ-95
CUMULATIVE FOR FY 1990

RESEARCH CODES	NISTARS	NISTARS NON-MECH	UADPS-SP NON-MECH	CUMULATIVE
A	1467 (76.7%)	46 (58.2%)	2248 (72.6%)	3761 (73.9%)
B	23 (1.2%)	2 (2.6%)	60 (1.9%)	85 (1.7%)
C	0 (0.0%)	0 (0.0%)	1 (0.0%)	1 (0.0%)
G	335 (17.6%)	17 (21.5%)	440 (14.2%)	792 (15.5%)
H	77 (4.0%)	11 (13.9%)	307 (9.9%)	395 (7.8%)
J	10 (0.5%)	3 (3.8%)	42 (1.4%)	55 (1.1%)
TOTALS	1912	79	3098	5089

the pre-adjustment clerk when upon acceptance of the adjustment and causative research is to be conducted.

Since all of these codes are general in nature and do not delineate any specific problems, we cannot make any determination as to specific reasons for the differences in the accuracy rate between the three different areas by using the research codes.

There were some problems encountered during this study. The first is that the NISTARS system is a relatively new system at NSC, San Diego. It first went into operation in

February 1987. The first non-mechanized area (building 322) also went under NISTARS control the same year. NISTARS non-mechanized areas comprise less than 2% of the total line items. Second, inventory records are maintained for the current fiscal year and the past two. This resulted in the inventory accuracy information for building 322 before it went under NISTARS control being unavailable for comparison purposes. This is important because this area has traditionally been a problem area in inventory accuracy due to the type of material located there.

While this study could not determine specific reasons for the difference between the areas based on the data collected, it did determine that a difference exists. It also determined that there is a shortcoming in the assignment of the research codes during the actual inventory. In addition, it highlighted that inventory results are not maintained in a database which could easily be used to study inventory accuracy problems.

V. CONCLUSIONS AND RECOMMENDATIONS

The NISTARS system is an important part of the Navy's Inventory Accuracy Program. Even though it was developed for mechanized warehouses, the Navy will eventually place all non-mechanized warehouses under NISTARS control. While NISTARS mechanized control improves the inventory accuracy over UADPS-SP, the inventory accuracy in non-mechanized warehouses placed under the NISTARS control is significantly lower than under UADPS-SP and NISTARS mechanized control. Whereas the data suggest that the cause may be the NISTARS system, one piece of information that is necessary to conclusively state that premise was not available. We do not know what the inventory accuracy rate was prior to those non-mechanized areas being placed under the NISTARS control. Without that information we cannot determine what portion, if any, of the difference in the inventory accuracy rate can be attributed directly to NISTARS.

Over 97% of the line items listed in non-mechanized areas under NISTARS control for this study were in building 322. Building 322 was selected to be placed under NISTARS control because it is physically joined to the NISTARS complex. The material in building 322 is mostly clothing, batteries and medical material. This type of material historically has been more prone to inventory accuracy problems than other types of

material. The reasons for this are usually associated with packaging, unit of issue, condition code, and shelf-life problems. For this reason it is difficult to conclude that the sole reason for the decline in accuracy is the result of the area being placed under NISTARS control.

In our opinion, however, NISTARS does contribute to inventory accuracy problems in non-mechanized warehouses. There are two reasons for this opinion. The first is that the NISTARS system was developed for automated warehouses and not designed to control material outside of the mechanized environment. One problem is the NISTARS program is not adequate to handle condition code and shelf-life material. This situation led to inventory problems. We understand that programming modifications are being worked on and implemented to correct this problem.

The second reason for problems in the NISTARS non-mechanized warehouses is the human factor. The method employed by NISTARS to control inventory is radically different from the UADPS-SP system in concept. This creates a training problem. To have the warehouse workers adjust to a new way of doing business, they need to understand how the new system operates and their function within that system. Under the UADPS-SP system, material had a tendency to remain in the same location for a long period of time. Many of the warehouse workers could tell where the material was located

under the UADPS-SP system. When material is received, UADPS-SP will attempt to put the material in the primary location listed in the records. Under NISTARS, when material is received, it is placed in the next available empty location. That is why NISTARS can maintain up to 99 locations for a line item while UADPS-SP will only display three locations.

NISTARS also employs a "balance by location" policy where it knows the quantity in each location at all times. UADPS-SP only tracks by total quantity. This means that the warehouseman must stow to and issue from the exact location indicated by NISTARS. Under UADPS-SP, the warehouseman could stow to or issue from any listed location and it was transparent to the computer. The warehouse worker must understand the importance of following the procedures that the NISTARS computer system issues to them and the problems that deviations from them will create.

Change is difficult to implement. These new procedures and the inability or unwillingness to understand or adjust to them by the warehouse workers and the inventory personnel is a cause of inventory accuracy problems. We understand that an intensive training program has been initiated at NSC, San Diego to address this problem.

We now make three recommendations to improve the inventory accuracy in NISTARS non-mechanized warehouses. The first one would be to increase the use of the STATMAN inventory program to better identify the problem areas in those warehouses. The

use of this tool could provide valuable information into the reasons for the differences between areas. Currently this program is only being run quarterly to the parameters dictated by NAVSUP for the total inventory at NSC, San Diego. By setting the parameters in a STATMAN inventory to segregate the inventory into classifications useful to the managers at the supply center, more accurate information would be available for problem solving.

The required time period for running a STATMAN inventory is 30 days. With the current requirement from NAVSUP to run one STATMAN quarterly, there is still time left during the quarter to complete additional STATMAN inventories. These inventories can overlap or even run at the same time. While this is an additional workload for the supply center, this information could be used to demonstrate that current scheduled inventories could be replaced with STATMAN inventories which may eventually reduce the total inventory workload. In addition, the information obtained from these specific inventories would be far more valuable to the managers at the supply center than the results from the quarterly STATMAN inventories.

The second recommendation would be to maintain an ongoing tracking system that would compare the accuracy rate of the new non-mechanized areas going under NISTARS control to their accuracy rate before the changeover. This information is contained in the UJ-95 inventory report created by UADPS-SP.

There are also several other computer generated inventory reports that contain valuable information for the managers. Currently this information is deleted from the UADPS-SP computer files ten days after the inventory is completed and is no longer available for report gene ation. This information is now available only by sorting through printed reports. To attempt to compile this information manually is not cost-effective. However, if the information in the completed inventory files in the UADPS-SP mainframe computer could be transferred either electronically through a network or by using a floppy disk for input to a personal computer, it could be used for management analysis. The information contained in the completed inventory files are valuable to the physical inventory division, the inventory accuracy officer, the quality control division, and the warehouse managers.

This would enhance the ability of the managers to isolate problem areas, make decisions, and use resources more effectively. Under the UADPS-SP system, managers do not have an on-line capability to query the computer for this information. This must be done through requests to the computer center to run a report for them. With this information available on a PC with database and spreadsheet programs, the managers would have the information much faster and consume less time on the saturated mainframe computer. This would be a benefit to both sides of the organization.

The third recommendation would be to change the way the research codes are now used during the inventory. As this study discovered, the research codes used by the preadjustment clerks do not indicate the causes of the errors between the physical counts and the records. They merely segregate the inventory into adjustments and non-adjustments and whether it was done automatically by the computer or manually by the preadjustment clerk. While this information is useful, the real purpose for the codes is not being accomplished. This is to provide information into the causes of the inventory errors to be used by the managers to improve inventory accuracy. This improvement can be accomplished by identifying whether the problem is procedural in nature or training-related. If it is procedural, make the necessary changes in the procedures to correct the situation. Update the desk guides or procedure manuals to reflect these changes and make sure that everyone who is impacted by these changes are informed of them. If it is training-related, conduct the necessary training to correct the problem and incorporate it into the overall training program.

The information provided by the research codes is very valuable for the managers to improve inventory accuracy. Currently this information is not being provided by the preadjustment clerks by utilizing the research codes. The reasons appear to be that there is not enough information, not enough time, and not enough training. The present procedure

calls for the preadjustment clerk to research the transaction ledger for only the 60 days prior to the inventory. In many cases this is not sufficient to determine the cause for the difference in the counts and records. To increase the amount of transaction ledger that the preadjustment clerk reviews will impact the ability to complete the inventory in the required 30 day time frame. To be able to do the necessary research, additional personnel may be required. If additional research is required, it may necessitate additional training or using higher graded personnel.

This area is a prime candidate for additional research to determine why they are not being used and what is required to make sure they can be used properly. There are several questions that could be pursued:

* What is the appropriate amount of transaction ledger to be reviewed to provide the required information?
* Should the amount of transaction ledger be determined by the preadjustment clerk?
* Is there sufficient information in the transaction ledger to determine the cause of the error?
* Are there other sources of information that should be used?
* Are the research codes currently assigned being assigned correctly?
* Would additional research require higher grade levels for preadjustment clerks?
* Is the training program adequate?
* Are the definitions of the research codes adequate for the preadjustment clerk to understand?

* If more research is required, what impact will there be on personnel?

* What information is really required by management?

The information provided by the research codes is valuable to management in formulating the corrective actions needed to reduce inventory accuracy problems. The reduction of inventory accuracy problems will improve our stewardship of the public trust and the readiness of our forces to carry out their mission.

APPENDIX A

SAMPLE OF THE UJ-95 REPORT

The following information came from the Physical Inventory Status Report (UJ-95). The report was generated at NSC, San Diego by UDAPS-SP on the STATMAN Inventory, dated 3 October 1990.

SERIAL NUMBER: G248

A - COMPLETED ITEMS

R	FSC	NIIN	COG	C	P	SM	PN	S	MT	RES	ADJ DT	ADJ QTY	UNIT PRICE	ADJ VALUE	MAJ	I/M	COM	PRIMARY	SECONDARY	TERTIARY DI
	5888	011842830	7R	A	A	PF	L	U	N	A	0248	0	9,280.00	.00				887019021		
	5930	011843583	8N	A	A		L		N	A	0254	0	108.16	.00				730302000		
	3850	011843346	8C	A	A		L	U	N	A	0248	0	415.00	.00				572022451		
	3040	011880339	8C	A	A		L		N	A	0250	0	310.27	.00				730100000		
	3010	011858249	7H	A	A		L	U	N	A	0248	0	9,780.00	.00				522029232		
	1560	011881115	7R	G	A	GF	L	U	N	A	0248	0	17,410.00	.00				884058683		
	1560	011881115	7R	F	A	GF	L	U	N	A	0250	0	20,760.00	.00				645254382		
	5340	011884835	KZ	A	A		L	U	N	A	0255	0	18.35	.00			1	730300000		
	5340	011884835	9Z	A	A		L	U	N	A	0255	0	18.35	.00			1	730300000		
	5935	011877839	8N	A	A		L	U	N	A	0254	0	13.85	.00				730300000		522025362
	4820	011878673	6R	A	A	TN	L	U	N	A	0249	0	1,520.00	.00				672105032		
	5998	011884954	7H	F	A		L	U	N	A	0249	0	4,710.00	.00				663023147	663033091	
	1560	011885818	1R	A	A	VN	L	U	F	H	0261	1	1,820.00	1,820.00	X		M	573167368		
	5330	011891898	1H	A	A	X3	L	7	N	A	025C	0	57.00	.00				853057415		
	1440	011898248	7H	A	A		L	U	N	A	0248	0	2,850.00	.00				730100000		
	2835	011898284	KZ	A	A		L	U	N	A	0248	0	1,700.00	.00				873078541		
	5360	011898152	9Z	A	A		L	U	N	A	0249	0	18.78	.00				730300000		
	5985	011803180	8N	A	A		L		N	A	0254	0	552.08	.00				730300000		421156100
	5340	011808131	7H	A	A		L	U	N	A	0250	0	2,270.00	.00				851034432		
	5998	011823364	7H	A	A		L	U	N	A	0254	0	740.00	.00				859168123		
	5340	011832851	1H	A	A		L		N	A	0250	0	57.00	.00				435550300		
	5865	011837567	7H	A	A		L	U	N	A	0248	0	14,780.00	.00				523080521		
	5105	011837868	9G	A	A		L		N	A	0249	0	9,710.80	.00				412219800		
	2820	011854801	8C	A	A		L	U	N	A	0248	0	1.22	.00				730100000		
	5310	011855878	9Z	A	A		L		N	A	0249	0	0.38	.00				446208404		
	6110	011870421	7R	A	A	AY	L		N	A	0249	0	4,130.00	.00				872141178		67214118K
	2915	011884672	1R	A	A	TN	L	U	N	A	0248	0	1,310.00	.00				601029433		
	5998	011702183	9N	A	A		L		N	A	0248	0	20.23	.00				730300000		
	5935	011702307	8N	A	A		L	U	N	A	0248	0	28.24	.00				730300000		522027187
	5935	011708126	8N	A	A		L	U	N	A	0254	0	18.58	.00				730300000		
	4220	011713141	1H	A	A	CP	L	U	N	A	0248	0	63.00	.00				730200000		
	4220	011713183	1H	A	A	CP	L	U	N	A	0248	0	28.50	.00				410306200		
	5815	011714153	7G	A	A		L	U	N	A	0248	0	1,300.00	.00				410353200		
	1560	011715836	7R	A	A	GF	L		N	A	0253	0	8,460.00	.00				582031063		
	6130	011725869	7H	A	A		L	U	N	A	0249	0	8,490.00	.00				411762200		
	2825	011745834	9C	A	A		L		N	A	0250	0	174.50	.00				730300000		
	5998	011758629	1R	A	A	RZ	L	U	N	A	0249	0	5,780.00	.00				601020531		
	4820	011773193	1H	A	A		L	U	N	A	0248	0	11,130.00	.00				882252221		
	5840	011773286	7H	F	A		L	U	N	A	0258	0	3,290.00	.00				333137352		
	7920	011773633	9Q	A	A		L	U	N	H	0262	15	12.31	184.65-		M		783062041		
	5330	011778208	9Z	A	A		L	U	N	A	0250	0	2.28	.00				730300000		
	5330	011802433	9Z	A	A		L		N	A	0251	0	19.61	.00				730100000		
	5995	011804202	7H	A	A		L	U	N	A	0249	0	1,580.00	.00				601018461		
	5905	011804358	9N	A	A		L	U	N	A	0254	0	0.10	.00				730300000		
	5898	011813846	7H	A	A	VN	L	U	N	A	0249	0	2,280.00	.00				411740200		

SERIAL NUMBER: G248

A - COMPLETED ITEMS

R	FSC	NIIN	COG	C	P	SM	PN	S	MT	RES	ADJ DT	ADJ QTY	UNIT PRICE	ADJ VALUE	MAJ	I/M	COM	PRIMARY	SECONDARY	TERTIARY DI
	5935	011823463	8N	A	A		L		N	A	0249	0	22.69	.00				730200000		
	5998	011828675	1H	A	A		L	U	N	A	0249	0	22.50	.00				730100000		
	5340	011830978	9Z	A	A		L	U	N	G	0250	5	1.32	6.60-				552031221	552031221	
	5820	011831122	7G	F	A		L	U	N	A	0249	0	64,960.00	.00				623160263		
	5340	011832914	1H	A	A		L	U	N	A	0250	0	492.00	.00				449102100		
	5845	011832950	7H	F	A		L		N	A	0249	0	8,140.00	.00				663007017		
	5951	011858989	8N	A	A		L		N	A	0254	0	77.22	.00				730300000		
	1095	011877694	7R	F	A	GF	L	U	N	A	0249	0	13,220.00	.00				622110283		
	5330	011880840	9Z	A	A		L		N	G	0255	2	3.34	6.68-				730300000		
	8030	011882973	9Q	A	A		L	U	N	A	0263	0	57.00	.00						
	8030	011882973	GG	A	A		L	U	N	A	0248	0	57.00	.00				573081141		
	2835	011887320	7H	F	A		L	U	N	A	0249	0	9,740.00	.00				623176271		
	5895	011887818	3H	A	A		L	U	N	A	0248	0	1,350.00	.00			1	522024613		
	5905	011890687	9N	A	A		L		N	A	0254	0	0.58	.00				730300000		
	5365	011897796	8Z	A	A		L		N	A	0249	0	14.28	.00				730200000		
	1580	011897789	1R	A	A	BE	L	U	N	A	0249	0	248.00	.00				730100000		
	6665	011818961	8L	A	A		L		N	A	0249	0	18.20	.00				730304000		
	4820	011824761	7R	A	A	GF	L		N	A	0250	0	8,680.00	.00				584070231		
	5998	011830397	1H	A	A	XS	L	7	N	A	0249	0	238.00	.00				601009312		
	5855	011833546	7H	A	A		L	U	N	A	0251	0	5,100.00	.00				730100000		
	7023	011833597	7G	F	A		L		N	A	0249	0	4,330.00	.00				663031054		
	2805	011857124	8C	A	A		L		N	A	0251	0	181.73	.00			1	730100000		
	5841	011870096	7R	A	A	XH	L	U	N	A	0249	0	1,420.00	.00				872119286		
	6810	011877797	9G	A	A		L	U	N	A	0249	0	53.00	.00			1	722014412		
	4810	011882839	8C	A	A		L		N	A	0249	0	33.87	.00				421540408		
	5865	011887700	7R	F	A	AY	L	W	N	H	0268	1	611,750.00	611,750.00-	X		M	622108233		
	4810	012002812	7H	A	A		L	U	N	A	0250	0	16,590.00	.00				551029152		
	5998	012011093	OJ	A	A		L	U	N	A	0249	0	2,320.00	.00				730100000	730300000	
	4730	012014955	1R	A	A	GF	L	U	N	A	0251	0	194.00	.00				730200000		
	1730	012016134	1R	A	A	GF	L	U	N	A	0254	0	51.00	.00				730300000		
	6145	012019439	9Z	A	A		L	U	N	A	0249	0	0.89	.00			1	863057231		
	6145	012019504	9Z	J	A		L		F	G	0249	21	1.66	34.86				863064041		
	7510	012019861	1H	A	A		L		N	A	0248	0	0.98	.00				574080402		
	6145	012022833	9Z	A	A		L	U	N	A	0249	0	2.30	.00				863000000		
	7510	012023358	CX	A	A		L	U	N	A	0250	0	3,594.00	.00				112273631		
	6145	012023463	9Z	A	A		L		N	A	0249	0	1.38	.00				863038533		
	6145	012026556	9Z	A	A		L		N	A	0249	0	7.25	.00				863044503		
	6145	012027751	9Z	A	A		L		N	A	0249	0	0.65	.00			1	863044563	863044563	863000000
	6145	012029011	9Z	A	A		L		N	A	0249	0	2.98	.00				863051591		
	6145	012030382	KZ	L	A		L		N	A	0249	0	0.76	.00			1	863064041		
	6145	012030382	9Z	L	A		L		N	A	0249	0	0.76	.00			1	863064041		
	8210	012033243	1H	A	A		L	U	N	A	0248	0	13.00	.00				413631500		
	6145	012035401	KZ	A	A		L		N	A	0249	0	1.41	.00			1	863050501		
	6145	012035401	9Z	A	A		L		N	A	0249	0	1.41	.00			1	863050501		
	4820	012037508	7H	A	A		L	U	N	A	0249	0	5,330.00	.00				691078275		

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A - COMPLETED ITEMS

R	FSC	NIIN	COG	C	P	SM	PN	S	MT	RES	ADJ DT	ADJ QTY	UNIT PRICE	ADJ VALUE	MAJ	I/M	COM	PRIMARY	SECONDARY	TERTIARY DI
	5355	012580131	9Q	A	A		L		F	G	0255	3	10.53	31.59				730300000		
	5315	012583643	1H	A	A		L	U	N	A	0248	0	987.00	.00				584077171		
	5306	012586036	KZ	A	A		L	U	N	A	0250	0	144.25	.00				447835100		
	4920	012586861	7R	A	A	EE	L	U	N	A	0248	0	2,180.00	.00				730100000		
	6105	012623329	9G	A	A		L		N	A	0251	0	247.45	.00				730100000	730300000	
	7350	012636700	9Q	A	A		L	U	N	H	0264	40	35.87	1,434.80-	X	M		783087191		
	3020	012661488	9C	A	A		L		N	A	0254	0	64.22	.00				730300000		
	5988	012666068	7H	F	A		L		N	A	0248	0	0.02	.00				823146411		
	5230	012678241	7R	A	A	PF	L	U	N	A	0248	0	1,430.00	.00				413131600		
	5988	012683156	1H	A	A		L	U	N	A	0248	0	764.00	.00				730100000		
	5305	012712043	9Z	A	A		L		N	A	0251	0	30.89	.00				730200000		
	1005	012718800	1R	A	A	GF	L	U	N	A	0248	0	90.00	.00				730200000	730300000	
	1615	012725107	7R	A	A	VH	L	U	N	A	0248	0	6,370.00	.00				672110321		
	1620	012768074	7R	A	A	GF	L		N	A	0250	0	35,770.00	.00				645220226		
	2530	012815221	9C	A	A		L	U	N	A	0250	0	38.24	.00				551032463		
	5330	012832524	1H	A	A	CA	L		N	A	0254	0	78.00	.00				730300000		
	5988	012833414	7H	A	A		L	U	N	A	0248	0	1,850.00	.00				730100000	730300000	
	5305	012858017	5R	A	A	EY	L	U	N	A	0255	0	1.50	.00				730300000		
	4820	012859715	9C	A	A		L		N	A	0249	0	2,721.19	.00				564080511		
	6625	012911712	7G	A	A		L	U	N	A	0249	0	736.00	.00				730100000	730300000	
	5988	012938971	7R	F	A	GF	L		N	A	0248	0	1,420.00	.00				683036204		
	5305	012946801	9Z	A	A		L	U	N	A	0248	0	37.55	.00				730200000	730300000	
	6150	012951958	7R	A	A	SF	L	U	N	A	0248	0	10,830.00	.00				601027113		
	4320	012960700	7R	A	A	EQ	L	U	N	A	0248	0	1,540.00	.00				691083185		
	5365	012976380	KZ	A	A		L	U	N	A	0251	0	156.84	.00				730200000	730300000	
	6625	012981540	7R	F	A	SX	L		N	A	0248	0	1,520.00	.00				683020052		
	5988	013029178	7Q	A	A		L	U	N	A	0254	0	1,100.00	.00				730300000		
	5310	8974195 16	1R	A	A	GF	L	U	N	G	0254	1	0.63	.63-				730300000		

B - COMPLETED ITEMS - GREATER THAN 10% VARIATION

R	FSC	NIIN	COG	C	P	SM	PN	S	MT	RES	ADJ DT	ADJ QTY	UNIT PRICE	ADJ VALUE	MAJ	I/M	COM	PRIMARY	SECONDARY	TERTIARY DI
	0102	LF0002160	1I	A	A		L	U	N	H	0261	66	1.30	85.80-		M		533058261	533058261	
	0177	LF2235500	1I	A	A		L		F	G	0248	2	13.00	26.00				574080382		
	0102	LF6139110	1I	A	A		L	U	F	G	0248	160	3.20	512.00				532036531		
	0104	LF7105101	1I	A	A		L	U	N	H	0260	300	12.00	3,600.00-	X	M		534079081		
	4130	LLHAL6390	2S	F	A	A2	L		F	J	0264	1	75,000.00	75,000.00	X	M		371143041		
	4610	LLHA02437	2S	F	A	A2	L		N	H	0263	1	1,430.00	1,430.00-	X	M		335165323		
	1925	LL0701097	1H	A	A	DS	L	U	N	G	0250	1	153.00	153.00-				436757900		
	1925	LL0701384	1H	A	A	DS	L	U	F	G	0249	1	524.00	524.00				423048100		
	1925	LL0756472	1H	A	A	DS	L	U	N	G	0249	1	312.00	312.00-				413054300		

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B - COMPLETED ITEMS - GREATER THAN 10% VARIATION

R	FSC	NIIN	COG	C	P	SM	PN	S	MT	RES	ADJ DT	ADJ QTY	UNIT PRICE	ADJ VALUE	MAJ	I/M	COM	PRIMARY	SECONDARY	TERTIARY DI
	5845	LL0780907	1H	A	A	DS	L	U	N	G	0248	2	9.10	18.20-				423865600		
	5845	LL0775340	1H	A	A	DG	L	U	F	G	0250	3	250.00	750.00				436355300		
	5988	000308626	7H	A	A		L	U	F	H	0261	1	2,379.00	2,370.00	X	M		435855300		
	4820	000361745	9C	A	A		L	U	N	G	0250	1	95.37	95.37-		1		554062118		
	4820	000361746	9C	A	A		L	U	F	G	0254	1	376.55	376.55		1		730300000		
	5998	000465588	7R	F	A	RA	L	U	N	H	0261	1	4,790.00	4,790.00-	X	M		693018179		
	7105	000524686	9Q	A	A		L	U	F	G	0248	22	25.17	553.74				574081491		
	6660	000562389	9G	A	A		L	U	F	H	0262	14	123.98	1,735.72	X	M		730300000		
	5305	000616465	9Z	A	A		L	U	N	G	0250	67	0.51	34.17-				730300000		
	8040	000618303	9Q	A	A		L	U	F	H	0262	252	3.52	887.04	X	M		722008335		
	6920	000714780	9H	A	A		L	U	F	J	0264	601	75.24	45,219.24	X	M		770118141		
	5815	000725676	7G	F	A		L	U	N	H	0261	4	1,670.00	6,680.00-	X	M		645234184		
	7510	000822520	9Q	A	A		L	U	N	G	0249	1440	0.22	316.80-		1		603094092		
	5335	000892862	9Q	A	A		L	U	F	G	0248	2	9.58	19.16-				524079152		
	5310	000934418	9Z	A	A		L	U	F	G	0250	1	61.39	61.39				554071556		
	6110	001165327	7R	A	A	CY	L	U	N	H	0260	1	6,060.00	6,060.00-	X	M		671087258		
	2840	001167932	9V	A	A		L	U	N	G	0254	18	0.58	10.08-				730300000		
	6145	001178850	9Z	A	A		L	U	N	G	0250	1	21.78	21.78-		1		551036482		
	2815	001328711	7H	F	A		L	U	N	H	0264	2	5,500.00	11,000.00-	X	M		372106051	372106061	
	5961	001387433	9N	A	A		L	U	N	G	0254	1	4.86	4.86-		1		730300000		
	5340	001489588	9Z	A	A		L	U	N	G	0248	1	59.24	59.24-				572013513		
	8615	001481206	9L	A	A		L	U	N	J	0270	369	4.41	1,627.29-	X	M		869096061	869089001	
	8110	001520271	7H	A	A		L	U	N	G	0250	1	781.00	781.00-				858152322		
	3110	001561408	9Z	A	A		L	U	N	G	0249	2	62.35	124.70-				730200000		
	1030	001778780	1H	A	A		L	U	N	G	0249	6	57.00	342.00-				582008138		
	4010	001889391	9Z	A	A		L	U	F	G	0248	4	21.36	85.44				574078123		
	5315	001875809	9Z	A	A		L	U	N	G	0254	90	5.31	477.90-				730300000		
	9510	001891647	KZ	A	A		L	U	N	H	0260	34	2.68	91.46-		M		784102253		
	5136	001897806	9Q	A	A		L	U	F	G	0255	58	3.44	199.52		1		730300000		
	4720	001949933	9C	A	A		L	U	N	G	0249	13	2.04	26.52-				687002055		
	8405	002043341	CY	F	A		L	U	N	H	0269	282	48.80	14,249.60-	X	M		857109111		
	5998	002044316	7H	A	A		L	U	N	H	0256	2	1,920.00	3,840.00-	X	M		413916600		
	5840	002138851	7H	A	A		L	U	N	J	0260	1	27,670.00	27,670.00-	X	M		692112211		
	5330	002222589	9Z	A	A		L	U	N	G	0249	4	2.02	8.08-				563036014		
	4210	002239877	9C	A	A		L	U	N	H	0261	8	29.29	234.32-		M		727141091		
	7910	002247986	9Q	A	A		L	U	N	H	0263	24	295.95	7,102.80-	X	M		112198731		112195711
	8520	002280598	9Q	A	A		L	U	N	H	0262	378	4.41	1,666.98-	X	M		727112011		
	9535	002316206	KZ	A	A		L		F	H	0260	6	455.61	2,733.66	X	M		764136264		
	5305	002383213	9Z	A	A		L		N	G	0255	4	0.99	3.96-				730300000		
	5305	002397663	9Z	A	A		L	U	F	G	0248	1	2.23	2.23				606643230		
	5120	002431351	9Q	A	A		L	U	N	G	0248	31	3.54	109.74-				730200000		
	7530	002439436	9Q	A	A		L	U	N	H	0257	90	0.89	80.10-		M		571032361		
	4730	002469519	9C	A	A		L	U	F	G	0250	1	5.06	5.06				730200000	606007110	
	5340	002469618	7Q	F	A		L	U	F	H	0261	2	1,880.00	3,760.00	X	M		855618011	663009142	
	8030	002472525	9Q	A	A		L	U	N	H	0262	9	1.15	10.35-		M		722012353		

SERIAL NUMBER: G248

B - COMPLETED ITEMS GREATER THAN 10% VARIATION

R	FSC	NIIN	COG	C	P	SM	S	MT	RES	ADJ DT	ADJ QTY	UNIT PRICE	ADJ VALUE	MAJ	I/M	COM	PRIMARY	SECONDARY	TERTIARY	DI	
	5310	002607795	9Z	A	A			F	G	0248	47	5.99	281.53		1		524091111				
	7510	002638843	9Q	A	A			F	G	0253	482	1.23	592.86				572032492				
	6810	002643937	9G	A	A		L	N	H	0251	156	1.84	309.12-		M		722018132				
	7930	002667137	9Q	A	A		L	N	H	0252	20	2.88	57.60-		M		727092114				
	5905	002738871	9M	A	A		L	N	G	0248	7	0.21	1.47-				561014078				
	5920	002763403	9M	A	A		L	F	G	0248	2	12.74	25.48				730200000				
	4710	002774043	9C	A	A		L	N	G	0249	2	5.17	10.34-				764096068				
	9520	002774901	KZ	A	A		L	F	G	0249	252	0.48	120.96			1	771111152	771030055	771108254		
	9520	002774903	KZ	L	A		L	N	G	0248	680	0.44	299.20-				771072201				
	9535	002777813	9Z	A	A		L	N	G	0249	1	387.29	387.29-				771055153				
	4730	002784824	9C	A	A		L	N	G	0254	205	0.42	86.10-				730300000				
	5120	002886574	9Q	A	A		L	F	G	0251	4	4.74	18.96				735083032				
	8105	002903360	9Q	A	A		L	F	G	0251	12	21.40	256.80				730100000				
	6145	002952813	9Z	A	A		L	F	G	0248	850	0.15	127.50				963036081				
	6532	002999613	9L	A	A		L	N	G	0248	4	0.81	3.64-				531031311				
	5330	003006169	9Z	A	A		L		N	0254	2	21.08	42.16-				730300000				
	5330	003058546	9Z	A	A		L	F	G	0248	2	1.87	3.74				563058184				
	8105	003344120	9Q	A	A		L	F	G	0246	37	13.94	515.78		1		534073081				
	2010	003520354	2S	F	A	P2	L	N	J	0267	1	46,110.00	46,110.00-	X	M		372138151				
	5977	003914007	9Q	A	A		L	N	H	0252	3	6.73	20.19-		M		730300000				
	6850	003929751	9G	A	A		L	F	H	0251	12	0.40	4.80		M		722006504				
	5330	003934898	9Z	A	A		L	F	G	0249	168	0.96	161.28		1		730200000				
	5999	003966880	9N	A	A		L		F	G	0249	101	2.68	270.68				963044036			
	4320	003988316	9C	A	A		L	U	N	G	0248	1	66.65	66.65-				730300000			
	5865	004156641	7H	F	A		L	U	F	H	0262	2	886.00	1,772.00	X	M		621040113			
	6240	004194301	9Q	A	A		L	U	F	H	0261	276	6.63	1,829.88	X	M		562030482			
	5865	004346194	1R	F	A	DX	L	U	F	H	0261	1	1,770.00	1,770.00	X	M		663034024	663035161		
	5307	004361678	1H	A	A	LT	L	U	F	G	0249	2	44.00	88.00				764058217			
	1560	004415302	7R	F	A	BF	L		N	J	0262	26	5,880.00	153,140.00-	X	M		645244199	621092028	621090028	
	6625	004458817	7Z	F	A	TE	L	U	F	J	0269	31	8,550.00	265,050.00	X	M		738000000	333193241		
	5970	004497814	9G	H	A		L	U	F	G	0249	2	24.53	49.06				563888822			
	5905	004520768	9N	A	A		L	U	F	G	0248	1	0.20	.20				411213403			
	5840	004590652	7G	A	A		L	U	F	H	0262	5	1,320.00	6,600.00	X	M		672140134			
	5970	004842813	9Q	A	A		L		N	G	0249	4	4.25	17.00-				564064054			
	9510	004933349	KZ	L	A		L		N	G	0249	5	21.21	106.05-				771037152			
	4730	005114014	9C	A	A		L	U	N	G	0256	5	4.69	23.45-				730300000			
	6145	005192602	9Z	A	A		L	U	F	G	0249	275	0.04	11.00				963036085			
	4320	005292929	7H	A	A		L	U	N	J	0261	1	17,170.00	17,170.00-	X	M		693146351	693146352	673175198	
	5330	005303526	9Z	A	A		L	U	F	G	0249	4	19.36	77.44				726063033	726063034		
	6620	005432534	7R	F	A	FZ	L		F	H	0262	1	1,380.00	1,380.00	X	M		738000000	621039063		
	5305	005432753	9Z	A	A		L	U	F	G	0249	73	3.18	232.14				730200000			
	6850	005437801	9G	A	A		L	U	F	G	0249	3	29.97	89.91				722014171			
	6145	005482403	9Z	A	A		L	U	F	G	0253	169	0.03	5.07				5510275117			
	7520	005581501	9Q	A	A		L	U	N	G	0248	38	0.71	26.98-				524093072			
	5330	005596516	9Z	A	A		L	U	F	G	0254	22	0.29	6.38				730300000			

SERIAL NUMBER: G248

B - COMPLETED ITEMS - GREATER THAN 10% VARIATION

R	FSC	NIIN	COG	C	P	SM	PN	S	MT	RES	ADJ DT	ADJ QTY	UNIT PRICE	ADJ VALUE	MAJ	I/M	COM	PRIMARY	SECONDARY	TERTIARY	DI	
	5330	005719736	9Z	A	A			L	U	F	H	0256	36	0.24	8.64		M		561010014			
	1560	005747369	1R	A	A	DA		L	U	F	H	0262	5385	1.10	5,934.50	X	M		730300000			
	8010	005774735	9Q	A	A			L	U	F	G	0249	9	75.57	680.13				722007151			
	5330	005793164	9Z	A	A			L	U	F	G	0249	16	0.40	6.40				730200000			
	5365	005803877	9Z	A	A			L	U	F	G	0249	1	0.10	.10				601022263			
	5130	005961178	9Q	A	A			L	U	F	H	0260	4	126.24	504.96		M		521015431			
	8010	005985765	9Q	A	A			L	U	F	G	0248	3	24.58	73.74		1		722011012			
	6810	005986600	9G	A	A			L	U	F	G	0254	38	5.95	226.10		1		722006311	722006312		
	6750	006118166	9G	A	A			L	U	N	G	0250	6	70.90	425.40-				61300111R			
	5315	006165524	9Z	A	A			L	U	N	G	0251	6	0.04	.24-				730300000			
	5999	006320288	9N	A	A			L		F	G	0249	1	28.95	28.95				421617700			
	1680	006332687	9G	A	A			L		N	G	0255	8	29.69	237.52-				730300000			
	7540	006343972	9Q	A	A			L	U	F	G	0248	7	1.59	11.13				532034821			
	6145	006359388	9Z	A	A			L	U	F	G	0250	135	0.01	1.35				551020164			
	8345	006561435	9D	A	A			L	U	F	H	0257	74	17.75	1,313.50	X	M		574079322			
	5940	006659568	9G	A	A			L	U	F	G	0254	690	0.80	552.00		1		730101000	533081392		
	6145	006696774	9Z	A	A			L	U	N	G	0250	1503	0.05	75.15-				551038623			
	3120	006774347	9Z	A	A			L	U	F	G	0248	90	0.04	3.60				574064067			
	5841	006887620	7R	F	A	DA		L	U	N	H	0260	1	3,550.00	3,550.00-	X	M		663019092			
	9350	006902841	9Q	A	A			L	U	F	G	0250	17	3.86	87.32				210090201			
	4720	007224723	9C	A	A			L	U	F	G	0248	52	2.37	123.24				963036583			
	5970	007241815	9G	A	A			L	U	N	G	0253	2219	0.13	288.47-				448064200			
	5305	007245898	9Z	A	A			L	U	F	G	0258	85	3.87	348.85				730200000			
	9330	007248175	9Q	A	A			L	U	F	G	0251	21	32.08	673.68				730400000			
	6130	007363334	7R	A	A	FA		L	U	N	H	0261	1	4,290.00	4,290.00-	X	M		687006063			
	5180	007529360	9Q	A	A			L		F	G	0249	1	683.76	683.76				561036501			
	5885	007583058	7H	A	A			L	U	N	H	0260	1	3,170.00	3,170.00-	X	M		672138213			
	4320	007902411	7H	A	A			L	U	F	J	0262	2	14,260.00	28,520.00	X	M		645244280			
	1095	007941603	1R	A	A	QA		L	U	F	G	0249	50	2.10	105.00				730100000			
	5365	008037311	9Z	A	A			L	U	F	G	0255	31	0.08	2.48				730300000			
	2840	008232767	7R	J	A	EQ		L	U	N	H	0261	1	7,430.00	7,430.00-	X	M		645200388			
	5961	008327549	9N	A	A			L	U	F	G	0248	111	0.24	26.64				730200000			
	1620	008671527	7R	A	A	FA		L		F	H	0261	1	14,680.00	14,680.00	X	M		672100055			
	1560	008696842	1R	A	A	MH		L	U	F	G	0249	3	193.00	579.00				730200000			
	6145	008808720	9Z	A	A			L	U	N	G	0254	152	3.89	591.28-				963064091			
	6505	008902027	9L	A	A			L	U	N	G	0261	7	1.04	7.28-		1		730300000	869086092		
	5840	008931678	2F	F	A	R1		L	U	F	H	0267	6	133,730.00	802,380.00	X	M		376108308			
	6145	009016843	9Z	A	A			L	U	F	G	0249	240	0.07	16.80				963037072			
	1560	009087981	9F	A	A			L		F	H	0261	1	1,094.83	1,094.83	X	M		112197641			
	1720	009113767	5R	A	A	EY		L	U	N	G	0249	3	29.00	87.00-				687022061			
	6625	009153052	1R	A	A	BE		L	U	N	H	0260	1	8,840.00	8,840.00-	X	M		601030217			
	5325	009213848	9Z	A	A			L	U	F	G	0254	100	0.68	68.00				730300000			
	5920	009243937	9N	A	A			L	U	N	G	0255	17	1.07	18.19-				730300000			
	4720	009304514	9C	A	A			L	U	N	G	0248	1	1.22	1.22-				561028081			
	5945	009342800	9N	A	A			L	U	F	G	0254	2	20.23	40.46				730300000			

SERIAL NUMBER: 0248

C - COMPLETED ITEMS - EXCLUSION CODE 4

R	FSC	NIIN	COG	C	P	SM	PN	S	MT	RES	ADJ DT	ADJ QTY	UNIT PRICE	ADJ VALUE	MAJ I/M	COM	PRIMARY	SECONDARY	TERTIARY	DI

NO RECORDS THIS SECTION

D - COMPLETED REVERSAL ITEMS

R	FSC	NIIN	COG	C	P	SM	PN	S	MT	RES	ADJ DT	ADJ QTY	UNIT PRICE	ADJ VALUE	MAJ I/M	COM	PRIMARY	SECONDARY	TERTIARY	DI

NO RECORDS THIS SECTION

E - COMPLETED REVERSAL ITEMS - GREATER THAN 10% VARIATION

R	FSC	NIIN	COG	C	P	SM	PN	S	MT	RES	ADJ DT	ADJ QTY	UNIT PRICE	ADJ VALUE	MAJ I/M	COM	PRIMARY	SECONDARY	TERTIARY	DI

NO RECORDS THIS SECTION

F - COMPLETED REVERSAL ITEMS - EXCLUSION CODE 4

R	FSC	NIIN	COG	C	P	SM	PN	S	MT	RES	ADJ DT	ADJ QTY	UNIT PRICE	ADJ VALUE	MAJ I/M	COM	PRIMARY	SECONDARY	TERTIARY	DI

SERIAL NUMBER: 0248

NO RECORDS THIS SECTION

SECTION I SUMMARY: NON REVERSAL	1,588	TOTAL L/I COMPLETED	$ 422,821,648.48-	EXTENDED ADJ VALUE	
	194	TOTAL L/I LOSSES	$ 2,153,481.81-	LOSS ADJ VALUE	
	188	TOTAL L/I GAINS	$ 1,730,625.12	GAIN ADJ VALUE	
	182	MANUAL REVIEW ADJUSTMENTS	$ 42,569,615.30	L/I INVENTORIED	
	0	TOTAL L/I EXCLUSION CODE 4	23.74%	L/I ADJ RATIO	
	1,217	TOTAL L/I ZERO ADJUSTMENT	9.12%	GROSS MONETARY ADJ RATIO	

SECTION I SUMMARY: REVERSALS	0	TOTAL L/I COMPLETED	$.00	EXTENDED ADJ VALUE	
	0	TOTAL L/I LOSSES	$.00	LOSS ADJ VALUE	
	0	TOTAL L/I GAINS	$.00	GAIN ADJ VALUE	
	0	MANUAL REVIEW ADJUSTMENTS	$.00	L/I INVENTORIED	
	0	TOTAL L/I EXCLUSION CODE 4	.00%	L/I ADJ RATIO	
	0	TOTAL L/I ZERO ADJUSTMENT	9.12%	GROSS MONETARY ADJ RATIO	

SECTION II CANCELLED ITEMS

FSC	NIIN	COG	C	P	SM	PN	S	CANC DATE	CON	PRIMARY	SECONDARY	TERTIARY	DIFM
6625	001131242	7Z	M	A	A7		U	0280					
8930	001373091	8M	A	A	1		U	0282		7868888888			
8915	001378677	8M	M	A	2		U	0282		7868888888			
8915	001378677	8M	M	A	1		U	0282		7868888888			
8915	001430831	8M	A	A	1		U	0280		7868888888			
8915	001430831	8M	A	A	2		U	0280		7868888888			
8940	001487141	8M	A	A	2		U	0280		7868888888			
8940	001487141	8M	A	A	1		U	0280		7868888888			
8915	002238606	8M	A	A	1		U	0280		7868888888			
4320	004111681	7R	M	A	BN		U	0280					
6130	004342224	7R	M	A	PF			0280					
4810	004484646	7R	M	A	BN		U	0280					
8935	004804863	8M	A	A	1		U	0282		7868888888			
8935	004837788	8M	A	A	1		U	0282		7868888888			
8930	005121671	8M	A	A	1		U	0280		7868888888			
8915	005841657	8M	A	A	1		U	0280		7868888888			
8950	006186478	8M	A	A	1		U	0280		7868888888			
8925	007823318	8M	M	A	1		U	0282		7868888888			
8920	008237221	8M	A	A	1		U	0280		7868888888			
2540	008212783	7R	M	A	EQ			0280					
1650	008886600	7R	M	A	BE		U	0283					
2840	009986812	7R	M	A	FQ		U	0280					
1440	010123283	4Z	M	A	PF		U	0280					

SERIAL NUMBER: G248

SECTION II CANCELLED ITEMS

FSC	NIIN	COG	C	P	SM	PN	S	CANC DATE	COM	PRIMARY	SECONDARY	TERTIARY	DIFM
1650	010218843	7R	M	A	MH		U	0280					
8970	010288406	9M	A	A	2		U	0282		7669999999			
8970	010288406	9M	A	A	1		U	0282		7669999999			
8925	010807498	9M	A	A	1		U	0280		7669999999			
5998	010837378	7E	M	A			U	0280					
1620	011835407	7R	M	A	GF			0280					
2815	011884874	7R	M	A	TN		U	0280					
5998	011742121	7R	M	A	GF		U	0280					
8905	012507580	9M	A	A	2		U	0280		7669999999			
8905	012507580	9M	H	A	2		U	0280		7669999999			
8915	012507567	9M	L	A	2		U	0282		7669999999			
8960	012536354	9M	H	A	2		U	0280		7669999999			
8920	012536357	9M	H	A	2		U	0282		7669999999			

SECTION II SUMMARY: 36 NUMBER OF CANCELLED ITEMS

SECTION III ITEMS WITH OUTSTANDING FIRST COUNTS

M	FSC	NIIN	COG	C	P	SM	UI	PN	S	CANC	IND	COM	PRIMARY	SECONDARY	TERTIARY	DIFM
	4730	012383848	9C	A	A		EA	2			1		7301000000			
	6650	001385451	1H	A	A		EA	2	U		1		7302000000	871030452		
	5305	009006818	9Z	A	A		EA	2			1		7302010000			
	4730	011840971	9C	A	A		EA	2	U		1		7303000000	80554721C		
	2815	007870714	9I	A	A		EA	2	U		1		7303020000			
	7330	002687453	9Q	A	A		EA	2	U		1		7304000000	873080491		
	6505	001161038	9L	A	A		BX	2	U		1		7304000000			

SECTION III SUMMARY: 7 NUMBER OF ITEMS WITH OUTSTANDING FIRST COUNTS

SECTION IV ITEMS WITH OUTSTANDING SECOND COUNTS

M	FSC	NIIN	COG	C	P	SM	UI	S	CN	IND	OH QTY	CNT QTY	UNIT PRICE	PADJ VALUE	COM	PRIMARY	SECONDARY	TERTIARY	DIFM

SECTION IV SUMMARY: 0 NUMBER OF ITEMS WITH OUTSTANDING SECOND COUNTS

SERIAL NUMBER: G248

SECTION V OUTSTANDING MANUAL REVIEW ITEMS

M	FSC	NIIN	COG	C	P	SM	UI	PN	S	CI	MRDT	OH QTY	CNT QTY	UNIT PRICE	PADJ VALUE	IFLT	COM	PRIMARY	SECONDARY	TERTIARY	DI

SECTION V SUMMARY: 0 NUMBER OF OUTSTANDING MANUAL REVIEW ITEMS

SERIAL NUMBER: G248 SUMMARY

1,638	LINE ITEMS SELECTED			
36	LINE ITEMS CANCELLED			
1,596	LINE ITEMS COMPLETED	1,434	AUTOMATED	162 MANUAL REVIEW
0	LINE ITEMS COMPLETED REVERSAL	0	AUTOMATED	0 MANUAL REVIEW
7	LINE ITEMS OUTSTANDING	7	FIRST COUNTS	0 SECOND COUNTS 0 MANUAL REVIEW

APPENDIX B

ERROR CLASSIFICATION CODES

ERROR CLASSIFICATION CODE	DEFINITION	EXAMPLES
	PREADJUSTMENT RESEARCH RESULTS/REVERSALS	
A	Resolved, No Adjustment	For UADPS Activities, this code will be programmatically assigned by AIR Programs.
B	Infloat Resolved During Manual Review, No Adjustment	Restricted to UADPS AIR Activities. Zero Adjustment with No Discrepancy.
C	All or Part of Adjustment Avoided-Receiving Error	Receiving error accounted for the majority of the inventory imbalance. Receiving error corrected.
D	All or Part of Adjustment Avoided-Storage Error	Warehouse or issue error accounted for the majority of the inventory imbalance. Error corrected.
E	All or Part of Adjustment Avoided-Physical Inventory Error	Inventory error accounted for the majority of the inventory imbalance. Error corrected.
F	All or Part of Adjustment Avoided-Other Error	Error other than C, D, or E accounted for the majority of the inventory imbalance. Error corrected.
G	Reconciled by UADPS AIR Programs; Adjustment Taken	Restricted to UADPS AIR Activities only. This code will be programmatically assigned.

ERROR CLASSIFICATION CODE	DEFINITION	EXAMPLES
H	Unresolved, Adjustment Posted, below Causative Threshold	Non-zero Adjustment and Causative Research Not Required.
J	Unresolved, Adjustment Posted, Passed to Causative	Non-zero Adjustment for which Causative Research is to be Conducted.
K	Spot Inventory Reversal - Erroneous Warehouse Refusal	Found in Established or Adjacent Location during Preadjustment.
L	Spot Invertory Reversal - Erroneous Inventory Adjustment	Erroneous Adjustment Other Than Warehouse Refusal (K) or material found in Unrecorded Location (M).
M	Spot Inventory Reversal - Material Found in Unrecorded Location	Material Found During Location Survey or Warehouse Clean-up.
N	Spot Inventory Reversal - Duplicate Document Posted	Duplicate Receipt/ Issue/Condition Code Transfer.
P	Spot Inventory Reversal - Other	Spot Inventory Reversals not covered by ECCs K, L, M, or N.
	CAUSATIVE RESEARCH RESULTS/REVERSALS	
Q	Receiving - Data Entry Error	Input Did Not Match Source; Exception not Processed Correctly.
R	Receiving - Duplicate Receipt	Self-Explanatory. Put in Process.

ERROR CLASSIFICATION CODE	DEFINITION	EXAMPLES
S	Receiving - Document Not Posted	Erroneous Reversals; Uncleared Exceptions.
T	Receiving - Other	Receiving Error Other Than Q, R, or S.
U	Storage - Erroneous Warehouse Refusal	Found in Established or Adjacent Location.
V	Storage - Location Error	Found in Deleted Location; Found in Unrecorded Location.
W	Storage - Document Not Posted	Receipt in Process; Warehouse Adjustment Not Posted; Condition Code/Stock Number Transfer.
X	Storage - Issue Error	Over/Under Issue; Wrong NSN or Condition Code.
Y	Storage - Physical Processing Not Complete	Change Notice Consolidations; Locally Initiated Request for Warehouse Action.
Z	Storage - Other	Warehouse/Issue Errors Other Than U, V, W, X, or Y.
1	Inventory Control - Document Not Posted/Incomplete	Warehouse Adjustment; Condition Code/Stock Number Transfer; U/I Conversions; Indicative Data; Customer Credits.
2	Inventory Control - Other	Inventory Control Errors Other Than 1.
3	Physical Inventory - Improper Reconciliation	Infloat Reconciled Incorrectly; Arithmetic Error.

ERROR CLASSIFICATION CODE	DEFINITION	EXAMPLES
4	Physical Inventory - Prior Off-setting Adjustment Not Reversible	Prior Off-setting Adjustment Greater Than 365 Days Old or Prior to Most Recent Inventory.
5	Physical Inventory - Erroneous Count	Self-Explanatory.
6	Physical Inventory - Other	Inventory Error Other Than 3, 4, or 5.
7	Miscellaneous - System/ Program Error	Duplicate Issue Document Produced.
8	Miscellaneous - Zero/ Partial Stow Found	Material Found that was Input as Zero/ Partial Stow.
9	Miscellaneous - Unresolved after Causative	No conclusive findings after causative research completed.
Blank	No Research Code Input	Self-Explanatory.

LIST OF REFERENCES

1. Navy Fleet Material Support Office, UADPS-SP Executive Handbook, Navy Fleet Material Support Office, Mechanicsburg, PA, August 1983.

2. Naval Supply Center, San Diego, Naval Integrated Storage Tracking and Retrieval System (NISTARS), Naval Supply Center, San Diego, CA, 1982.

3. Navy Fleet Material Support Office, Naval Integrated Storage, Tracking and Retrieval System (NISTARS) Interface Requirements Statement (IRS), Navy Fleet Material Support Office, Mechanicsburg, PA, October 1987.

4. Naval Supply Systems Command, NAVSUP Instruction 4440.115G, Naval Supply Systems Command, Washington, D.C., September 1987.

5. Navy Fleet Material Support Office, Statistical Accuracy Technique and Measurements Analysis, Navy Fleet Material Support Office, Mechanicsburg, PA, June 1985.

BIBLIOGRAPHY

Navy Fleet Material Support Office, Preadjustment Research and Reconciliation Desk Guide, Navy Fleet Material Support Office, Mechanicsburg, PA, September 1984.

Naval Supply Systems Command, The Inventory Accuracy Problem, Report and Plan of Action, Naval Supply Systems Command, Washington, D.C., March 1982.